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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/553,164

07/05/2006

Thian Hoey Tio

TS1519 US

9075

23632

7590

11/16/2006

SHELL OIL COMPANY

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EXAMINER

RIDLEY, BASIA ANNA

ART UNIT

PAPER NUMBER

1764

DATE MAILED: 11/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/553,164	Applicant(s) TIO, THIAN HOEY	
	Examiner Basia Ridley <i>BR</i>	Art Unit 1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 October 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |  |
|---|--|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>20051014</u> . | 6) <input type="checkbox"/> Other: ____  |

## **DETAILED ACTION**

### ***Information Disclosure Statement***

1. The European Search Report issued in Application No. PCT/EP2004/050504, dated 13 August 2004 cited in the information disclosure statement filed on 14 October 2005 have been considered, but will not be printed on any patent resulting from this application.

### ***Specification***

2. The disclosure is objected to because of the following informalities:

- disclosure on P7/L8-18 describing that “part (of the steam reforming product) will leave space (36) via openings (34) to space (33) ...” is not consistent with Fig. 1 as described on P6/L11-18 and P7/L22-26.

Appropriate correction is required.

### ***Drawings***

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p) because they contain crossed out characters, see Fig. 1-3. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

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4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because Fig. 2 does not include the following reference sign(s) mentioned in the description: “oxygen containing gas (50’)” (P9/L20-21. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

5. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: “56” (Fig. 2-3) and “61” & “67” (Fig. 3). Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fuderer (USP 4,650,651).

Regarding claims 1-2, Fuderer discloses a process for preparation of gas containing hydrogen and carbon monoxide from a carbonaceous feedstock, comprising:

- (a) partially oxidizing a carbonaceous feedstock (11) in a vertically oriented tubular partial oxidation reactor vessel having an upper end and a lower end (Fig. 1), the vessel comprising a burner at the upper end (C5/L3-27), thereby obtaining an effluent comprising a first gaseous mixture of hydrogen and carbon monoxide (C5/L3-27);
- (b) catalytically steam reforming a carbonaceous feedstock (1) by feeding a feed of steam (2) and the carbonaceous feedstock (1) to convective steam reformer (Fig. 1) comprising a tubular reactor provided with one or more tubes (4) containing the reforming catalyst, to obtain a steam reforming product;
- (c) feeding the steam reformer product to the upper end of the partial oxidation reactor to obtain a mixture of the effluent of step (a) and the steam reformer product (Fig. 1); and
- (d) providing heat for the steam reforming reaction in step (b) by convective heat exchange between the mixture obtained in step (c) and the stem reformer tubes, thereby obtaining a hydrogen and carbon monoxide containing gas having a reduced temperature (Fig. 1).

Regarding claims 1-2, while Fuderer discloses that the steam to carbon molar ratio of feed to step (b) is controlled (C6/L2-7), with the desire to minimize said ratio (C3/L38-42 and C4/L42-43) the reference does not explicitly disclose said ratio being below 1, and further between 0.5 and 0.9. The specific steam to carbon molar ratio of feed to step (b) is not considered to confer patentability to the claims. As the reactor operating efficiency and product composition are variables that can be modified, among others, by adjusting said steam to carbon molar ratio of feed to step (b), the precise steam to carbon molar ratio of feed to step (b) would have been considered a result effective variable by one having ordinary skill in the art at the time the invention was made. As such, without showing unexpected results, the claimed steam to carbon molar ratio of feed to step (b) cannot be considered critical. Accordingly, one of ordinary skill in the art at the time the invention was made would have optimized, by routine experimentation, the steam to carbon molar ratio of feed to step (b) in the process of Fuderer to obtain the desired balance between the operation efficiency and product composition (*In re Boesch*, 617 F.2d. 272, 205 USPQ 215 (CCPA 1980)), since it has been held that where the general conditions of the claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. (*In re Aller*, 105 USPQ 223).

Regarding claims 3 and 5, Fuderer discloses the process wherein the temperature of the mixture obtained in step (c) is the same or an obvious variant of the claimed temperature of between 800°C to 1050°C. Specifically, the reference discloses that the temperature of the effluent from the step (b) is from about 650°C to about 900°C (C8/L17-20) and that said temperature rapidly raises as the result of the exothermic reactions for example to above 930°C for typical operation before it brought down to from about 900°C to about 1100°C (C8/L28-41).

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Further the reference discloses that the temperature of the mixture obtained in step (c) may raise rapidly to about 1100°C (C9/L57-60) and that an ordinary artisan would adjust various operating conditions to control, among others, the temperature of the mixture obtained in step (c) for the purpose of producing sufficient heat to supply the requirements of step (b) (C12/L7-52).

Therefore, the specific temperature of the mixture obtained in step (c) is not considered to confer patentability to the claims. As the reactor operating efficiency and product composition are variables that can be modified, among others, by adjusting said temperature of the mixture obtained in step (c), the precise temperature of the mixture obtained in step (c) would have been considered a result effective variable by one having ordinary skill in the art at the time the invention was made. As such, without showing unexpected results, the claimed temperature of the mixture obtained in step (c) cannot be considered critical. Accordingly, one of ordinary skill in the art at the time the invention was made would have optimized, by routine experimentation, the temperature of the mixture obtained in step (c) in the process of Fuderer to obtain the desired balance between the operation efficiency and product composition (*In re Boesch*, 617 F.2d. 272, 205 USPQ 215 (CCPA 1980)), since it has been held that where the general conditions of the claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. (*In re Aller*, 105 USPQ 223).

Regarding claims 4 and 6-7, Fuderer discloses all of the claim limitations as set forth above. Additionally the reference discloses the process further comprising autothermally reforming (ref. 9 & 8) the mixture obtained in step (c) (Fig. 1).

### ***Conclusion***

8. In view of the foregoing, none of the claims are allowed.

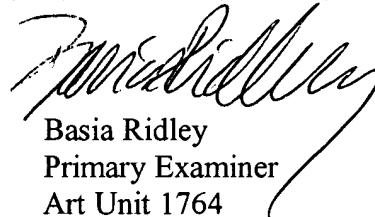
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9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner Basia Ridley, whose telephone number is (571) 272-1453.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola, can be reached on (571) 272-1444.

The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Technical Center 1700 General Information Telephone No. is (571) 272-1700. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Questions on access to the Private PAIR system should be directed to the Electronic Business Center (EBC) at (866) 217-9197 (toll-free).



Basia Ridley  
Primary Examiner  
Art Unit 1764

BR

November 13, 2006